Notice of Allowability	Application No.	Applicant(s)	
	09/922,459	LIN ET AL.	
	Examiner	Art Unit	
	DISMERY E. MERCEDES	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *BPAI decision filed 9/29/2009*.

2. ☒ The allowed claim(s) is/are *1-100*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

This Office Action is in response to Board of Appeals and Interferences Decision filed on 9/29/2009/

Allowable Subject Matter

1. Claims 1-100 are allowed.

2. The following is an examiner's statement of reasons for allowance:

Independent Claim 1, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a method for providing an early warning of thermal decay comprising *writing a test pattern to a track of a magnetic disk, wherein said test pattern has a higher data density than a data density of user data in said track; measuring an amplitude of a signal produced by reading said test pattern; storing said measured amplitude; reading said test pattern from said track to obtain an observed amplitude of a signal produced by said test pattern; comparing said measured amplitude to said observed amplitude*, in combination with the other limitations in the claim.

Independent Claim 11, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a method for providing an early warning of thermal decay comprising *writing a test pattern to a track of a magnetic disk, wherein said test pattern has a lower data density than a data density of user data in said track; measuring an amplitude of a signal produced by reading said test pattern; storing said measured amplitude; reading said test pattern from said track to obtain an observed amplitude of a signal produced by said test pattern; comparing said measured amplitude to said observed amplitude*, in combination with the other limitations in the claim.

Independent Claim 21, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a method for detecting decay in hard disk drive comprising *identifying a sector of a magnetic disk having a magnetization that is less than an average magnetization for said magnetic disk; writing an early warning pattern to said sector; producing a thermal decay warning signal if said observed amplitude is less than said reference amplitude by more than a predetermined amount*, in combination with the other limitations in the claim.

Independent Claim 30, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a method of detecting thermal decay in a magnetic storage device comprising *writing a test pattern having a greater susceptibility to thermal decay than a 1T pattern to a magnetic storage medium; reading an amplitude of a signal produced by said test pattern to obtain a reference amplitude; comparing said reference amplitude to said observed amplitude; and in response to an unfavorable comparison, producing a thermal decay warning signal*, in combination with the other limitations in the claim.

Independent Claim 36, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a hard disk drive comprising *wherein an amplitude of a signal derived from said test pattern in a data track of said data tracks and having a greater susceptibility to thermal decay than user data in said data track is transmitted by said channel, and a thermal decay warning signal is generated if said amplitude of said warning signal is less than a reference amplitude*, in combination with the other limitations in the claim.

Independent Claim 47, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a hard disk drive comprising *wherein an amplitude of a signal derived from said test pattern in said data track and having a different data density in said data track than user data in said data track is transmitted by said channel, and a thermal decay warning signal is generated if said amplitude of said warning signal is less than a reference amplitude*, in combination with the other limitations in the claim.

Independent Claim 56, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a hard disk drive comprising *wherein an amplitude of a signal derived from said early warning pattern in said data track and having a greater susceptibility to thermal decay than a 1T pattern in said data track is transmitted by said channel, and a thermal decay warning signal is generated if said amplitude of said warning signal is less than a reference amplitude*, in combination with the other limitations in the claim.

Independent Claim 61, 66, 71, and 76 are allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a method comprising *reading the test pattern from the track to obtain an observed amplitude; comparing the reference amplitude to the observed amplitude; and producing a thermal decay warning signal if the comparison is unfavorable*, in combination with the other limitations in the claim.

Independent Claim 81, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a method comprising

identifying a sector on the disk that has a greater than average susceptibility to thermal decay; writing a test pattern to the sector in response to identifying the sector; comparing the reference amplitude and the measured amplitude; and producing a thermal decay warning signal if the comparison is unfavorable, in combination with the other limitations in the claim.

Independent Claim 86, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a method comprising *identifying a sector on the disk that has a greater than average susceptibility to thermal decay; writing a test pattern to the sector in response to identifying the sector, wherein the test pattern has a greater susceptibility to thermal decay than any servo information and any user data on the disk; comparing the reference amplitude and the measured amplitude; and producing a thermal decay warning signal if the comparison is unfavorable*, in combination with the other limitations in the claim.

Independent Claim 91, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a method comprising *identifying a sector on the disk that has a greater than average susceptibility to thermal decay; writing a test pattern to the sector in response to identifying the sector; reading the test pattern from the sector to obtain a reference amplitude; storing the reference amplitude in the disk drive; shipping the disk drive from a factory to an end user; comparing the reference amplitude and the measured amplitude; and producing a thermal decay warning signal if the comparison is unfavorable*, in combination with the other limitations in the claim.

Independent Claim 96, is allowable over the prior art since the cited references, in particular Southerland et al. (US 6,147,827); Tsunoda (US 6,525,891); Alex (US 6,429,984) and Abraham et al. (US 5,810,477), taken alone or in combination do not teach or suggest a method comprising *writing*

evaluation test patterns to the disk; selecting a test pattern from the evaluation test patterns that exhibits the greatest amount of thermal decay; writing the test pattern to a sector on the disk; comparing the reference amplitude and the measured amplitude; and producing a thermal decay warning signal if the comparison is unfavorable, in combination with the other limitations in the claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Liu et al. (US 6,611,389), Sacks (US 6,490,111); Young (US 6,445,525); Cheng et al. (US 6,697,203); Quak et al. (US 6,633,442); Smith et al. (US 6,008,176); McEwen et al. (US 7,173,783); Higgins et al. (US 6,987,630); Seng et al. (US 7,209,304).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISMERY E. MERCEDES whose telephone number is (571)272-7558. The examiner can normally be reached on Monday - Friday, from 9:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Thi Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dismery E. Mercedes/
Primary Examiner, Art Unit 2627